Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A method for evaluating, with a single equipment, physical parameters such as the absolute permeability and the porosity of a fragmented natural or artificial porous medium such as a zone of an underground reservoir, from rock fragments (F) taken in this medium, comprising a stage of immersing fragments contained in a containment chamber (1) in a liquid and of intermittently communicating the chamber containing the fragments with a source of liquid under pressure comprising an accumulator (9) containing an elastic volume of liquid, so as to compress the gas trapped in the pores of the rock, a stage of measuring the volume of liquid injected, a stage of modelling the evolution of the volume of liquid injected from a priori selected initial values at least for permeability (K) and the residual gas saturation, and a stage of iterative adjustment of the value of the physical parameters of the rock fragments so as to obtain the best possible adjustment of the modelled evolution of the volume injected with the measured evolution of the volume injected in the chamber, characterized in that :

- during the stage of immersion, in the liquid, of the fragments contained in containment chamber (1), the volume of liquid injected is measured by measuring the concomitant pressure variation in said accumulator (9).

2. (previously presented) A method as claimed in claim 1, wherein the modelling stage is also carried out from a priori selected initial values for porosity (Φ).

3. (previously presented) A method as claimed in claim 1, comprising a prior stage of feeding the washed and dried rock fragments into containment chamber (1) which is first communicated with a gas tank at a predetermined pressure, so as to determine the solid volume of said fragments, the envelope volume and the mass of the fragments are measured, and the porosity (Φ) and the density of the rock fragments are deduced therefrom, the modelling stage comprising modelling the evolution of the volume of liquid injected from a priori selected initial values of permeability (K) and of the residual gas saturation, and from the value measured for porosity (Φ).

4. (currently amended) A method as claimed in ~~any one of the previous claims~~ claim 1, wherein the stage of communicating the chamber with the accumulator is carried out so as to cause, during a first period, a fast pressure increase in the chamber and compression of the gas trapped in the pores of the rock, followed by a relaxation period after isolation of the chamber, and comprises measuring the evolution of the pressure in the chamber during the two periods.

5. (currently amended) A method as claimed in ~~any one of the previous claims~~ claim 1, wherein the containment chamber is filled with drill cuttings.

6. (currently amended) A method as claimed in ~~any one of the previous claims~~ claim 1, wherein the containment chamber is filled with rock fragments obtained by crushing cores taken in a well, notably cores obtained by sidewall coring of a well.

7. (currently amended) A method as claimed in ~~any one of claims 1 to 4~~ claim 1, wherein the containment chamber is filled with rock fragments invaded by drilling fluids.

8. (currently amended) A method as claimed in ~~any one of claims 1 to 4~~ claim 1, wherein the containment chamber is filled with previously cleaned rock fragments.

9. (previously presented) A device for evaluating physical parameters such as the absolute permeability and the porosity of a fragmented natural or artificial porous medium such as a zone of an underground reservoir, from fragments (F) taken in this medium, comprising a processing system (8), a containment chamber (1) for the fragments, an injection assembly for injecting a liquid into the chamber so as to fill the chamber containing the rock fragments, and for carrying out a cycle comprising a stage of liquid injection into the chamber, this assembly comprising an accumulator (9) containing an elastic volume of liquid and means (V2) controlled by the processing system for controlling communication of accumulator (9) with chamber (1) containing the rock fragments, means (7) for measuring the pressure in the chamber, processing system (8) being suited for modelling the evolution of the volume of liquid injected from initial values selected for the physical parameters of the rock fragments, and for adjusting iteratively the values to be given to these physical parameters so as to obtain the best possible adjustment between the modelled evolution of the physical quantity and the measured evolution of said quantity in the chamber, characterized in that it comprises means (10) for measuring pressure variations in accumulator (9) and in that processing system (8) is suited for

calculation of the volume of liquid injected in the chamber from the accumulator, from the pressure variation measured by pressure measuring means (10).

10. (previously presented) A device as claimed in claim 9, comprising a gas tank (11) that can be communicated with chamber (1) by means of a valve (V3), an instrument (13) for measuring the envelope volume so as to determine the porosity of the fragments and means (12) for measuring the mass of the fragments.

11. (previously presented) A device as claimed in claim 10, characterized in that the means for measuring the envelope volume of the fragments to be tested comprise a powder pycnometer.

12. (currently amended) A device as claimed in claim 10 ~~or 11~~, wherein the elastic volume of liquid is delimited in said accumulator (9) by a volume of gas, said relation being obtained by applying the gas law.

13. (currently amended) A device as claimed in claim 10 ~~or 11~~, wherein the elastic volume of liquid is delimited in said accumulator (9) by an elastic membrane or a moveable element, said relation being obtained by prior calibration of the deformations or of the displacements.